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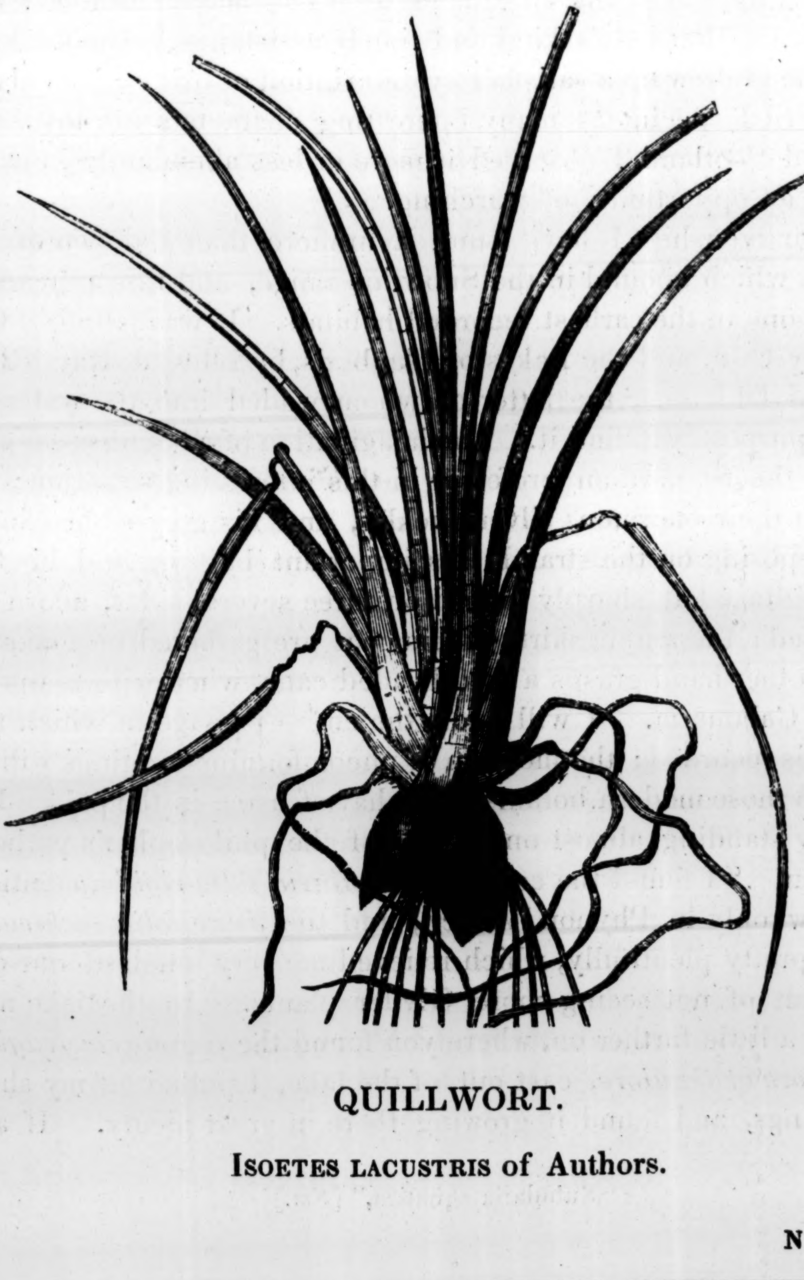
ART. LI. — *A History of the British Lycopodia and allied Genera.*

By EDWARD NEWMAN. (Continued from page 86).



QUILLWORT.

ISOETES LACUSTRIS of Authors.

LOCALITIES.

England.
Wales.
Scotland.
Ireland.
} In the lakes of all our mountain districts.

The Quillwort, though confined to our mountain lakes, is an abundant plant in such situations, clothing the bottoms of the deep and still waters with a perennial verdure, and supposed by the casual tourist to be a submerged grass. In the North of England it occurs abundantly; and I am indebted to Miss Beever, of Coniston, for an abundant supply of living specimens from that neighbourhood: had it not been for that lady's kind and timely assistance, I should have been unable to draw up a satisfactory description of this curious plant; since in dried specimens many interesting characters are lost. In Ireland and Scotland I observed it more or less abundantly in every lake I had an opportunity of searching.

In Caernarvonshire I have found it in more than a dozen of the little lakes which abound in the Snowdon range, and this appears to have been one of the earliest recorded habitats. It was found in Ogwen, Lyn-y-Cwn, and the Lakes of Llanberis, by Llhwyd, Ray, Richardson and Dillenius, the latter of whom waded into the waters of Llanberis purposely to find it. The imagination of a botanist delights to picture the Sherardian professor in this interesting situation; his shoes, with their enormous silver buckles, and his grey-ribbed hose, are seen reposing on the strand; his important bag wig and his formidable military hat, sharply looped on three several sides, adorn his learned head; the ample skirts of his coat are gathered on one arm, whilst the other hand grasps a gold-headed cane, wherewith to uproot the brittle Calamaria. I will quote the entire passage in which this adventure is recorded; the mention of uncomfortable lodgings will be amusing to those modern botanists who have feasted in the palace-like hotel, now standing almost on the site of the philosopher's pathetic lamentation. "I found the common *Subularia folio rigido*, mentioned to grow only in Phynon Vreech, and the *Juncifolia cochleariæ capsulis** pretty plentifully, which relieved me very much of our disappointment of not seeing more Glyder plants. In the lake near Llanberis, a little further on, where you found the *Subularia fragilis, folio longiore et tenuiore*, cast out of the lake, I pulled off my shoes and stockings, and found it growing there in great plenty. If any body had the means of fishing out plants from the depths of these lakes, I am inclined to think he might find strange things. Near this place, about three years ago, Mr. Evans, coming home late from a christening, in stormy and rainy weather, was drowned. His corpse could not be found by any means used for fishing. There being no parson living at the place at present, it is almost impossible for any body to go herborizing thither. We had very hard and uncomfortable lodging at the alehouse, and with difficulty got a young man to be our interpreter and guide. At last young Mr. Evans, of Bangor, gave us leave to lie at his house, and sent us provisions from Bangor.

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* "Subularia aquatica," [*Sm.*]

"If some rich botanist, that has no relations or children, would build a house there, and buy some land to it, which might be done with little money, it would be a very kind invitation for botanists to visit these strange places, and be an inducement for making a collection of Welsh plants, as you proposed. Without such a fixed place of abode, it seems to me impracticable." *

Dillenius learned from the mountaineers of the neighbourhood, that fish feed on the Isoetes; and that when detached from its hold in the soil and cast on shore, the cattle devour it greedily and grow fat on it.† The passage is rather obscurely worded, and its meaning seems to have been mistaken by compilers, who make it fatten the fish, and leave the bullocks out of the question.

The figures by Dillenius are striking, but in some points scarcely accurate. That in the 'Flora Danica' (191) possesses none of the characteristics which distinguish the root of our British species, and this part of the drawing is either supplied from imagination or drawn from a species hitherto undiscovered in this country. The same observation applies to the figure of the capsule in 'English Botany,' (1084), where that part is represented as bivalved. Sir W. J. Hooker's figure in the 'Flora Londinensis' is the best that I have seen, but in this there is an indistinctness in the representation of the tuber, and a reference to certain scales on the capsule, the existence of which I have been altogether unable to detect. In Loudon's 'Encyclopædia of Plants' (894), the capsule of Pilularia is given as that of Isoetes, and that of the latter is entirely omitted.

The roots are three or four inches in length, flexible, semipellucid, of uniform substance, tubular, and sometimes dichotomously divided

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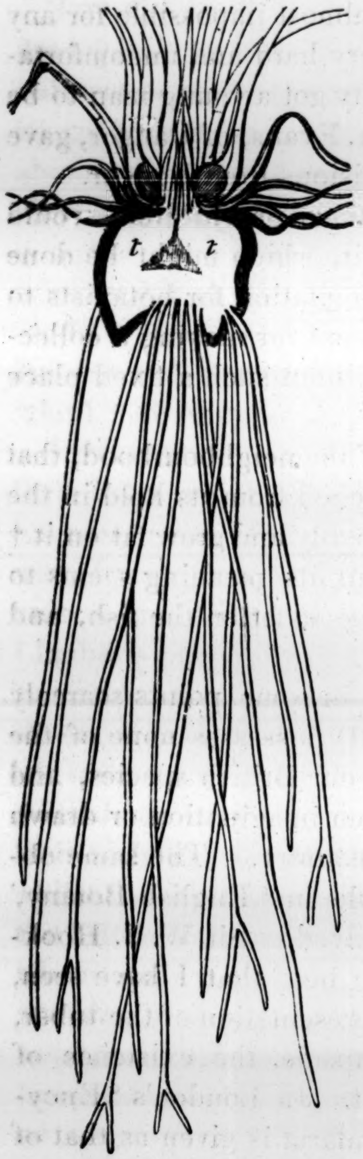
* Linn. Correspondence, ii. 143.

† Referunt monticolæ pisces, quos habent optimi generis, utraque hæc herba vesci, et armenta, si projectam inveniant, avidè devorare et pinguescere. Hist. Musc. 542.

towards the extremity. They spring from a tuber, which, in mature plants, is about the size of a hazel-nut. This tuber seems analogous to what I have called a tufted rhizoma in ferns: it is of various form, commonly, however, slightly bilobed; its external coating is spongy, and of a dark brown colour approaching to black, and apparently composed of decayed portions of its substance: the interior is very compact and of a pure white, with a small and nearly pellucid portion in the centre, whence the leaves appear to originate. The taste of this tuber is earthy, but not otherwise remarkable, and it seems perfectly innoxious, as I have eaten several without injury. A longitudinal section of the tuber (*t t*) with its attached radicles, is shown in the margin. Wahlenberg says that this tuber vegetates in the interior while dying round the circumference,* a mode of accounting for its appearance which seems highly probable.



The leaves are sessile, and rise from the crown of the tuber; at the base they are very broad, and furnished with membranous margins, which clasp the inner leaves much in the same manner as the scales of a lily-bulb. With the exception of this basal portion, the leaves are nearly cylindrical, sometimes however approaching to a quadrate form, with obtuse angles, and terminating in a sharp point; they are hollow, the interior being divided by longitudinal septa into four tubes, which are again subdivided into numerous compartments by transverse septa placed at irregular distances: these transverse septa are very apparent through the semi-pellucid substance of the leaf, and give it a jointed appearance. The leaves are extremely brittle, and usually break at these apparent joints. They are persistent, — the plant being in every respect an evergreen, whence the Linnean name of *Isoetes*,† signifying that its appearance

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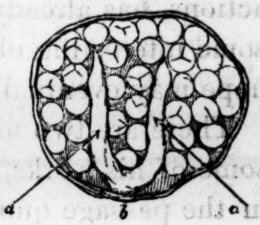
[*] Flora Lapponica, 294.

[†] ισος æqualis, ετος annus.

is alike throughout the year. The exterior leaves decay slowly and in order of priority, the decay commencing in each leaf about an inch above the crown of the rhizoma and extending upwards and downwards; the decayed portion soon loses its rigidity, the upper part bending over and becoming prostrate. The leaf retains its attachment long after its vitality has ceased; and numerous leaves so attached fall over the tuber and its radicles when the plant is taken from the water, and, mingling with the latter, are preserved as such in most of our herbaria. Leaves in a state of decay are shown in the figure at the head of this article.

The fructification of the Quillwort is very curious. It consists of capsules or thecæ, about the size of swan-shot, placed singly at the base of each leaf, in the very substance of which they are imbedded; only a very small portion of the capsule being visible through a circular aperture in the anterior face of the leaf. In this structure alone does it differ from Lycopodium, in which genus the theca is quite distinct, although perfectly sessile in the axil of the leaf, and removable without injury to the leaf itself. The substance of the theca is hard though membranous; it is attached at a single point (*b*) on its posterior surface, to something which appears analogous to a midrib of the leaf. The figure in the margin represents a theca removed from its cavity in the leaf: from its point of attachment (*b*) arise what appear to be two free placentæ (*a a*), for the attachment of the seeds, yet I cannot positively assert that such is their office, for I have never opened a theca without observing that the seeds escaped, as if entirely without attachment. Wahlenberg speaks of these bodies as being *many;** from this statement, and that author's surpassing accuracy, I am inclined to suppose the few thecæ which I have had the opportunity of examining in a recent state to be exceptions to the general rule, especially as in the generic character of Isoetes in 'English Flora' (iv. 343), Sir J. E. Smith describes the capsule of the fertile flowers as having "several transverse bristle-shaped bars." The seeds themselves are rugose and perfectly white; they have raised ridges on the surface, indicating a quadruple division; indeed, when thus divided, the inferior half of each seed is nearly hemispherical, and the superior half may be again divided into



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* Ex illo receptaculo fructus longitudinali oriuntur plura receptacula seminum seu partialia fiiliformia, &c. Fl. Lap. 295.

three sub-triangular portions. When crushed, even after the lapse of years, these seeds are found to be filled with a transparent and somewhat oleaginous fluid. Other thecæ contain apparent seeds, which are extremely minute, being scarcely equal in size to the pollen-granules of many flowering plants: these minute bodies possess the form and characters of the larger seeds. The thecæ containing the two kinds of seed are scarcely to be distinguished from each other, nor do they follow any law in their relative position, as many of our botanists have asserted, but most frequently occur alternately. Linneus, in his 'Iter Scanicum,' has described these as male and female flowers,* but botanists are not agreed as to their precise nature, the question, when discussed, must comprise the kindred twofold fructification of Lycopodium Selaginoides, and probably many other species: the real nature of the four portions into which each (supposed) seed is divisable, also requires further investigation. I am too superficial a botanist to offer an opinion on so important a subject.

Mr. Valentine, whose valuable paper on the structure and development of the organs of Pilularia, in the 18th vol. of the Linnean Transactions, has already been noticed in this work (Phytol. 55), has made some interesting observations on the germination of Isoetes, which I hope may eventually be given to the public.

There are two forms of Isoetes, so different that Dillenius, and, in some of his works, even Linneus, treat them as distinct species; thus in the passage quoted from Dillenius, at p. 154, they are designated "Subularia folio rigido" and "Subularia fragilis;" and in his great work, the 'Historia Muscorum,' the same author describes them as "The short and thick-leaved Quillwort, Calamaria folio breviore et crassiore," and "The long and slender-leaved Quillwort, Calamaria folio longiore et graciliore;" and enters very clearly into their distinguishing characters.† The following paragraph from a letter of Linneus to Haller, written in 1749 and printed in Smith's 'Selection of the Correspondence of Linnæus, &c.' ii. 433, proves that this great botanist considered the two forms to be species.—"In Scania I have met with the flowers, male as well as female, of both species of *Calamistrum*, figured by Dillenius, in his *Historia Muscorum*, by the name of *Calamaria*."

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* *Masculi flores* solitarii intra basin foliorum interiorum. *Cal.* Squama cordata, acuta, sessilis. *Cor.* nulla. *Stam.* Filamentum nullum. Anthera subrotunda, unilocularis, intra basin folii sita.

Feminei flores solitarii in eadem planta, intra basin foliorum exteriorum. *Cal.* ut in masculis. *Cor.* nulla. *Pist.* occultum. *Per.* Capsula subovata, bilocularis, intra basin folii sita. *Sem.* numerosa, globosa.

† Calamaria folio longiore et graciliore. The long and slender-leaved Quillwort. A precedenti differt foliis longioribus angustioribus et rectioribus: radix porro durior, minus tuberosa, minusque crassa est et fibræ ejus breviores sunt et magis ramosæ, cæteroquin foliorum texturam, colorem, semina et reliqua habet communia. Hist. Musc. 541, tab. LXXX.

Gray, in his 'Natural Arrangement of British Plants,' makes two varieties in addition to the normal form of the plant, and describes them as follows.

β. gracilis. Leaves long, slender.
Calamaria folio longiore et graciliore. Dill. M. 541.

γ. fragilis. Leaves very brittle, slender, pointed, transparent, pores numerous, minute.
Subularia fragilis, folio longiore et tenuiore. Raii Syn. 307. 3.

By a reference to Ray* it will be seen that this Subularia fragilis is an addition by Dillenius, and is doubtless identical with the Calamaria folio longiore &c. of that author; the forms are thus again reduced to two, and concerning these Mr. Wilson, who has paid great attention to the subject, kindly sends me his opinion in the following words.

"The solitary plants with short spreading leaves, I believe to be the first full development after the seedling state, and before any lateral extension of the rhizoma has taken place: when the plants are crowded together, either by lateral increase (or offsets) or by a multitude of individuals in close contact, the fronds can grow only in an erect posture. In a specimen from Llyn Ogwen, the tallest I have, and which I cut through the middle before drying, the section of the rhizoma or tuber is very large, while in another specimen, gathered in the same place, and at the same time, the rhizoma is very small and inconspicuous; in a third specimen the rhizoma is very broad and concave at the base. The size of the tuber may depend on the age and vigour of the plant; its analogy with the rhizoma of ferns I think considerable: when a number of the outer or lower fronds have ripened and dropped off, then and not before it becomes exposed to view."

Mr. Sansom has given the two supposed species a minute and careful examination, and has favoured me with the following remarks.—"In the diffuse variety the seeds are globular or nearly so, and the sutures in many cases very indistinct, while in the erect plant the seeds are angular, the angles appearing to be formed by the swelling of the edges of the sutures, and thus giving it an angular appearance. Again, the texture of the seed is different; in the diffuse plant it has a slightly pellucid appearance, while, in the erect variety, they are of a firmer texture, appearing quite white and horny." Mr. Sansom, however, suggests, with great propriety, the probability of the seeds which he examined being in different stages of maturity; those which I have examined do not exhibit the differences which he has pointed out.

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* Syn. Ed. 3, p. 307.

The following definitions appear to me to express the distinguishing characters of the two forms.

a. Normal form. Fronds 6 to 15 in number, 2 to 5 inches in length, spreading, very brittle: tuber as large as a hazel-nut, slightly bilobed; radicles about as long as the leaves, rarely divided. This form is represented in the figure at the head of this article; the full length of the radicles being shown at p. 156.

β. Slender form. Fronds 20 or more in number, 12 or 18 inches long, very erect and compact together: tuber very small, mostly to be distinguished with difficulty; radicles less than one fourth the length of the leaves, frequently divided.

The two forms grow together in the lakes of England, Scotland and Wales. EDWARD NEWMAN.

(To be continued).

ART. LII.—*List of Plants found in Devonshire & Cornwall, not mentioned by Jones in the Flora Devoniensis, with remarks on the rarer Species.* By The Rev. W. S. HORE, M.A., F.L.S., G.S.[*] *Communicated by* EDWIN LANKESTER, M.D., F.L.S., F.B.S.E.

IT was my intention to have prepared a list of the plants indigenous to the counties of Devon and Cornwall, accompanied with remarks on the rarer species, but when I considered that a Flora of the former county existed, published about twelve years since, I determined on limiting my observations to an enumeration of such species as have since been discovered in Devon, and those which are found in Cornwall, but which have not been met with in the sister county. The latter are so few in number, that Jones's 'Flora Devoniensis' may be considered as a Flora of the two western counties, and the whole district, when geographically viewed, would induce us to arrive at the conclusion that much discrepancy could not possibly exist in their natural productions. In the eastern portion of Devon, where the geological aspect of the county begins to merge into the newer formations of Dorsetshire and Hampshire, we might indeed be inclined to expect a more distinctly marked vegetation, and some plants not to be found towards its western limits; this however is not the case, for with the exception of that singularly rare plant — Lobelia urens, which is confined to the neighbourhood of Axminster, no distinct plants have as yet been detected. A similar result obtains with reference to the interior part of the county, where, notwithstanding some of the torrs of Dartmoor reach the lower limits of the Upland Region of Watson, no plants characteristic of that region have been discovered, except Listera cordata, recently found by Mr. Ward, on Coddon Hill, near Barnstaple.

We may therefore view these two western counties, with a portion of Somerset, i. e. Exmoor and its vicinity, as forming one large botanical district, connecting England with Brittany and Normandy by means of the Channel Islands, and manifesting such connection by the following plants:—Trichonema Columnæ, Iris fœtidissima, Asplenium lanceolatum, Erodium moschatum, Herniaria ciliata, Scilla autumnalis, Arthrolobium ebracteatum, Lotus angustissimus, Hypericum linariifolium, &c. To enter into a detailed account of the geological aspect of the district would be superfluous, as Jones in his Flora has been at some pains to describe it accurately as regards Devon, and with the exception of the serpentine of the Lizard, the same remarks may be supposed equally applicable to the county of Cornwall.

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[*] Read at the Meeting of the British Association held at Plymouth, August, 1841.

The number of Phanerogamous species described in the 'Flora Devonensis,' amounts to 774: to these must be added 41, for species since detected in the same county, or separated from others of which they were supposed to be mere varieties. Of these 41, 15 are also found in Cornwall. There are also 31 species peculiar to the latter county, not natives of Devon. The western Flora would therefore contain 846 species,—a number certainly not too great for the extent of surface included within its limits, and the variety of soil and other peculiarities which it presents.

Jones adopts the Linnæan classification, which, for convenience, I shall now follow in enumerating the additions &c. made since the publication of his work.

Veronica Buxbaumii, Ten. Occurs both in Devon and Cornwall, but not abundantly: it appears limited to the fields which have been recently ploughed, and disappears in a season or two.

Veronica polita, Fries. Not uncommon in this neighbourhood.

Pinguicula vulgaris, Linn. Mr. Ward found this plant in a bog near Ilfracombe, on the road to Morthoe. I had previously heard that it grew there.

Trichonema Columnæ, Reich. On the Warren at Dawlish. No plants were found there last year.

Fedia Auricula, Gaud. Lindulph, Cornwall, according to the Rev. Mr. Bree. Bolt Head, Devon, Mr. Babington.

Scirpus Holoschœnus, Linn. Jones says of this plant that it is now probably exterminated at Braunton Burrows, its only habitat, by draining and cultivation, as a search for it in the summer of 1820 was unsuccessful. Watson, in his Botanist's Guide, gives the following directions:—"Braunton Burrows, in hollows or flats among the sand hills. The keeper of the light-house knows the plant, and pointed out one of the stations to me about half a mile to the right of the light-house." I easily found this spot last autumn, which I believe to be the only one where the plant is now to be found. Miss Hill writes me concerning it as follows:—"The large spot where those rushes grew is now covered with blown sand, but a new place has been found. I do not think the present plants so large as those I have collected at the old spot thirty years since, and much within that time."

Cyperus longus, Linn. Miss Warren informs me that it grows near Truro, Cornwall.

Scirpus Savii, Spreng. Common on the borders of Dartmoor: Cornwall.

Briza minor, Linn. Near Torpoint and Truro, Cornwall.

Cynosurus echinatus, Linn. Under the Hoe, Plymouth, but I fear an outcast from a garden.

Avena pubescens, Linn. Catdown Quarries, Plymouth.

Brachypodium pinnatum, Beauv. I have never seen this plant in Devon, where Jones says it is common.

Bromus velutinus, Schrad. var. β. On the Cornish cliffs. Sir W. J. Hooker and Mr. Johns, who first directed attension to it, now think it only a variety of B. mollis.

Lolium arvense, With. Corn-fields, Devon.

Cynodon Dactylon, Pers. Between Penzance and Marazion, Cornwall.

Asperula arvensis, Linn. Near Plymouth. This plant was discovered some years since by my friend Mr. Johns, but has now disappeared. As it has since been found in cultivated fields in this neighbourhood, I fear that it can hardly be recognized as indigenous.

Exacum filiforme, Sm. Jones gives Stackhouse, a Cornish botanist, as his authority for considering this species as Devonian, who says it is more common in this county than in any other. Stackhouse must have mistaken some other plant for it. There are a few habitats for it in Cornwall.

Sagina maritima, Don. Common on the coasts of both counties.

Myosotis collina, Hoffm. Very common on stone walls near the sea in April and May.

Erythræa littoralis, Hook. Banks of the Teign, Devon.

Erythræa latifolia, Sm. On the cliffs of Devon and Cornwall.

Atropa Belladonna, Linn. In hedges at Combmartin, N. Devon; possibly an escape from a garden. I was informed that the village schoolmaster used the berries in the manufacture of ink.

Lonicera Periclymenum, Linn. A variety of this honeysuckle, with leaves resembling those of the oak, grows at Bovisand.

Viola Curtisii. Abundantly on Braunton Burrows. It is very distinct in its simple mode of growth, and the elongated form of its corolla, from Viola tricolor.

Trinia glaberrima, Hoffm. Berryhead, Devon.

Physospermum Cornubiense, Cuss. In an oak coppice near Tavistock, about a quarter of a mile from New Bridge. Bodmin, Cornwall.

Chenopodium botryodes, Sm. Banks of Looe Pool, Cornwall.

Ulmus stricta, Lindl. N. Devon and Cornwall.

Tamarix gallica, Linn. Lizard, Cornwall.

Statice spathulata, Desf. I believe the species found near Torquay to be this plant. Whitsand Bay, Cornwall.

Allium Schœnoprasum, Linn. Among rocks at the Lizard and at Tintagel, Cornw.

Scilla verna, Huds. Lizard, Cornwall.

Erica vagans, Linn. Common at the Lizard.

Erica ciliaris, Linn. Wet ground near Truro, Cornwall.

Calluna vulgaris, Salisb. A double variety was found by Sir C. Lemon's gardener near Truro, and is now cultivated at Carclew.

Elatine hexandra, DeCand. Near Helston, Cornwall.

Reseda fruticulosa, Linn. Penzance, Cornwall.

Rubus cæsius, Linn. Catdown Quarries, near Plymouth; probably introduced with ballast.

Teucrium Scordium, Linn. Braunton Burrows.

Lamium incisum, Willd. Penzance, Cornwall.

Scrophularia Scorodonia, Linn. Penzance.

Orobanche rubra, Sm. On the serpentine district of the Lizard, Cornwall.

Orobanche barbata, Poir. Torquay, Devon.

Erysimum orientale, Br. The Rev. J. Tozer says "that it came up spontaneously in a field that had been ploughed to form a garden, in the centre of the new square at Plymouth."

Geranium sanguineum, Linn. Kynance Cove, at the Lizard, Cornwall.

Althæa officinalis, Linn. Maristowe, Devon.

Polygala oxyptera. Salcombe, Devon: Mr. Babington.

Genista pilosa, Linn. Lizard, Cornwall.

Vicia lutea, Linn. Lizard, Cornwall.

Trifolium ornithopodioides, Linn. Torpoint, Cornwall.

Trifolium incarnatum, Linn. var. *β. Molinerii*. I found this plant in two places, about a quarter of a mile distant from each other, in 1839, near the Lizard light-house. One of the localities was on the verge of the cliff, where the turf had never been disturbed.

Trifolium Bocconi, Sav. Found by Messrs. Borrer and Babington at Cadgewith, Cornwall, but in small quantity.

Lotus angustissimus, Linn. Whitsand Bay, Cornwall, with the following species. Also near St. John's, Cornwall.

Lotus hispidus, Desf. Dartmouth, Devon. Whitsand Bay and Lizard, Cornwall.

Hypericum linariifolium, Vahl. Found by Messrs. Borrer and Babington at Cape Cornwall, near the Land's End. The Rev. W. Hinckes has specimens from Devon.

Tragopogon porrifolius, Linn. Brere Church-yard, Devon.

Hypochæris maculata, Linn. Lizard, Cornwall.

Chrysocoma Linosyris, Linn. Berryhead, Devon.

Gnaphalium dioicum, Linn. Camborne, Cornwall, as recorded in Watson's Botanist's Guide.

Gnaphalium sylvaticum, Linn. var. *β. rectum*. Shaugh Bridge, Devon.

Senecio squalidus, Linn. Walls at Bideford, Devon.

Limbarda crithmoides, Adans. Near Bovisand, Devon. Whitsand Bay, Cornwall.

Gymnadenia conopsea, Br. On a down near Helston, Cornwall.

Listera cordata, Br. Coddon Hill, Barnstaple: Mr. Ward.

Malaxis paludosa, Sw. I have only seen a single Devonshire specimen, which was gathered by a friend on Dartmoor, near South Tawton.

Euphorbia platyphylla, Linn. Torpoint, Cornwall.

Euphorbia hiberna, Linn. Near Glenthorne; Mr. Ward, jun. Near Lynton, Devon; Miss Griffiths.

Mercurialis annua, Linn. Quarries, Plymouth, possibly imported with ballast.

Asplenium lanceolatum, Huds. Several places in this neighbourhood. Penzance, Cornwall.

Hymenophyllum Wilsoni, Hook. On rocks above Shaugh Bridge, Devon.

Herniaria ciliata, Bab. Lizard, Cornwall.

Viola lutea, Huds. Land's End, Cornwall.

Arenaria verna, Linn. Lizard, Cornwall.

Stachys ambigua, Sm. Near the Land's End, Cornwall; Mr. Watson, in his Botanist's Guide.

Papaver somniferum, Linn. Near Sidmouth, Devon; and Penzance, Cornwall; Mr. Watson.

Oxalis stricta. Penzance, Cornwall.

Galium erectum, Huds. Near Plymouth; Mr. Bankes.

Arthrolobium ebracteatum. On Trescan, one of the Scilly Islands.

I may also mention that two northern ferns were discovered by Mr. Ward, jun., last summer, on Exmoor and near Glenthorne, viz., Cryptogramma crispa and Asplenium septentrionale; neither of which had previously been recorded as natives of the West of England.

W. S. Hore.

Art. LIII. — *Notice of 'The London Journal of Botany,' being a New Series of 'The Journal of Botany.'* By Sir W. J. Hooker. London: Baillière, Regent Street.

It is with feelings of unmingled satisfaction that we announce the present spirited recommencement of this invaluable work. While we are endeavouring to render our pages as popular as scientific accuracy will permit; and while we avowedly give the preference to everything connected with *British* Botany, the 'Journal' must attract those laborious and erudite papers, which, although invaluable as works of reference, are scarcely calculated for the hasty perusal of those readers who seek in a periodical the passing information — the botanical chit-chat of the day: it must also continue to obtain those minutely descriptive latin lists of exotic novelties which have hitherto rendered its pages so acceptable to the technical botanist. Our little ephemeral will be contented with those lighter contributions — those unstudied brevities and observations which, delightful though they be to ourselves and to numbers of our readers, would detract from the scientific dignity of the graver 'Journal.'

Thus each of these botanicals will take what the other is glad to give, and so promote the prosperity of its friendly rival. Influenced by these feelings, we wish the "New Series" every success; and though our narrow limits preclude the possibility of giving anything like an analysis of the numbers as they appear, we purpose always giving a list of the articles, and occasionally transferring to our chapter of "Varieties" any paragraph relating to British Botany, which we think will be interesting to our readers. The following are the contents of the two numbers already published.

I. Notes on a Botanical Excursion to the Mountains of North Carolina, &c. with some remarks on the Botany of the higher Alleghany Mountains. (In a letter to Sir W. J. Hooker; by *Asa Gray, M.D.*) II. Notes upon Cape Orchidaceæ; by *Professor Lindley.* III. Descriptions of several New Genera of South-African Plants; by *The Hon. W. H. Harvey.* IV. Some Account of the Paraguay Tea, (Ilex Paraguayensis); by *The Editor.* Botanical Information: containing Notice of New British Plants—1. Equisetum elongatum, of Willdenow. 2. Chara latifolia, Willdenow. 3. Polyporus nitidus, Fries; the latter found by H. O. Stephens, Esq. on the decaying bark of trees near Bristol. Notices of Botanical Works. — Endlicher's Genera Plantarum. Endlicher's Iconographia. A Manual of British Algæ, &c. by the Hon. W. H. Harvey. Steudel's Nomenclator Botanicus seu synonymia plantarum universalis Ed. 2. Contributions to the Flora of India, by William Griffith. Arboretum et Fruticetum Britannicum, by J. C. Loudon. V. The Plants of the Grampians viewed in their relations to altitude; by *Hewett Cottrell Watson, Esq.* — This is a carefully prepared list of more than 400 plants; the altitude attained by each species in three different localities being given: the list is preceded by many valuable observations. VI. Description of Trochopteris, a new genus of Ferns; by *George Gardner, Esq.* VII. Notices of some plants new to the Flora of Britain; by *Hewett Cottrell Watson, Esq.* — Short notices of the discovery of these plants, — Linaria Bauhini, Lolium multiflorum, and Bromus commutatus, will be found in the Report of the Proceedings of the Botanical Society of London (Phytol. 136). Botanical Information: — Extracts of letters from Mr. Drummond, dated King George's Sonud, Swan River, &c., and from Dr. F. W. Hostman, dated Paramaibo. VIII. Biographical Sketch of the late Allan Cunningham, Esq.; by *Robt. Heward, Esq.*

Art. LIV.— *Varieties.*

111. *List of Plants in the vicinity of Lytham, Lancashire.* If the following List of plants found in the vicinity of Lytham, in July, 1841, is likely to be interesting to any of the readers of 'The Phytologist,' it is at your service.—

Salicornia herbacea, salt marshes.
Hippuris vulgaris, ditches.
Lycopus europæus, Lytham Common.
Iris Pseudacorus.
Scirpus maritimus, Lytham marshes.
Eleocharis palustris.
Ammophila arundinacea, Star hills.
Briza media.
Lolium perenne and arvense.
Rottbollia incurvata, marshes.
Triticum junceum, Star hills.
——— repens.
Sherardia arvensis.
Galium verum, pastures near the sea.
Plantago maritima and Coronopus, ditto.
Parietaria officinalis.
Cynoglossum officinale, Star hills.
Lycopsis arvensis.
Hottonia palustris.
Anagallis arvensis.
——— tenella, Lytham Common.
Solanum Dulcamara.
Erythræa Centaurium.
Samolus Valerandi, Lytham Common.
Glaux maritima.
Chenopodium maritimum and olidum.
Salsola Kali, salt marshes.
Gentiana Amarella, Lytham Common.
Eryngium maritimum, Star hills.
Torilis Anthriscus.
Daucus Carota.
Helosciadium nodiflorum.
Sium angustifolium.
Conium maculatum.
Œnanthe Phellandrium.
Apium graveolens.
Pastinaca sativa.
Parnassia palustris, Lytham Common.
Statice Armeria, pastures near the sea.
Linum catharticum.
Asparagus officinalis, Star hills.
Triglochin maritimum and palustre, marshes.
Alisma Plantago and ranunculoides.
Epilobium hirsutum and tetragonum.
Pyrola media, Lytham Common.
Silene maritima, pastures near the sea.
Arenaria Peploides, serpyllifolia, and marina.
Sedum acre.
Spergula nodosa, Lytham Common.
Lythrum Salicaria.
Agrimonia Eupatoria, Lytham Common.
Rubus cæsius, ditto.
Reseda Luteola.
Potentilla reptans.
Thalictrum minus.
Stachys palustris.
Clinopodium vulgare, Lytham Common.
Thymus Serpyllum, pastures.
Prunella vulgaris.
Bartsia viscosa and Odontites.
Pedicularis palustris, Lytham Common.
Linaria vulgaris.
Lepidium latifolium.
Cochlearia anglica, Lytham marshes.
——— danica, Blackpool.
Coronopus Ruellii, ditto.
Cakile maritima, Star hills.
Sisymbrium Sophia.
Brassica Monensis, Star hills.
Erodium cicutarium.
Malva rotundifolia.
Fumaria officinalis.
Ononis arvensis.
Anthyllis vulneraria, pasture near the sea.
Trifolium arvense.
Tragopogon major, Lytham Common.
Apargia hispida.
Arctium Lappa.
Carduus tenuiflorus, hedges.
Carlina vulgaris, Lytham Common.
Bidens tripartita.
Artemisia vulgaris,
Erigeron acris, Lytham Common.
Senecio aquaticus.

Aster Tripolium, Lytham marshes.
Solidago Virgaurea, Lytham Common.
Pulicaria dysenterica.
Orchis latifolia, Lytham Common.
Listera ovata, — ditto.
Epipactis latifolia, ditto.
———— palustris, ditto, abundant.

Euphorbia Paralias, Star hills.
———— Helioscopia.
Sparganium ramosum and simplex.
Urtica pilulifera, pastures near the sea.
Myriophyllum spicatum.
Asplenium Ruta-muraria.

— *N. Buckley; 22, Grafton St. Fitzroy Square, October* 18, 1841.

112. *Enquiry respecting Sieber's 'Synopsis Filicum.'* Is it in accordance with the plan of 'The Phytologist' to make such an enquiry as the following to the readers of that useful periodical? On Sieber's return from Martinique and the West India Islands, he brought back a number of specimens of ferns, an account of which was published under the title of 'Synopsis Filicum,' and numbered. This is not the 'Synopsis Filicum' of Swartz, and I suspect it was a paper published in some foreign periodical. Can any of your readers inform me where Sieber's 'Synopsis Filicum' is to be met with? Sieber's ferns are well known, and his 'Syn. Fil.' is referred to by Kaulfuss and Presl; but I can nowhere meet with any account of it. Sieber's name is mentioned as an authority in the Addenda to Linnæus's 'Systema Vegetabilium,' edited by Sprengel, or the second part of the 4th vol.—*J. Riley; Papplewick, October* 28, 1841.

[Mr. W. Pamplin has kindly sent us the following reply to the above enquiry; we shall be glad to receive further information on the subject from any correspondent].

Sieber's Ferns. To the best of my belief the citation of "Sieber, Synopsis Filicum," in Presl, Sprengel, and others, does not apply to any printed publication, but rather to the numbers upon the printed tickets which accompany his collections of specimens distributed among individual purchasers.—*W. P.*

113. *Death of J. E. Bowman, Esq., F.L.S., F.G.S., &c.* The readers of the *News* will perceive in our obituary of this week the death of our estimable and respected townsman, John Eddowes Bowman, Esq., which melancholy event took place at his residence near Manchester. The *Manchester Guardian* of the 11th instant pays the following just tribute to the benevolent character and literary acquirements of the deceased, and which we insert in preference to giving any lengthened eulogy of our own:—"The death of this very intelligent and excellent gentleman, which was noticed in our last number, will be a great loss to science. He was indefatigable in the pursuit of knowledge, and his time and talents were most willingly devoted to its advancement. In his botanical and geological investigations he displayed a perseverance, activity, and acuteness, seldom surpassed; and he had no greater pleasure than in the discovery and communication of any new fact illustrative of the wisdom, power, or benevolence of the Deity. Soon after the commencement of his residence in Manchester, he became intimately acquainted with the different cultivators of kindred studies: and by the activity of his mind, and his zeal for the promotion of knowledge, no less than by the accuracy and solidity of his own acquirements, proved one of the most valuable and efficient members of the principal scientific institutions of this town and neighbourhood. His exemption from the absorbing avocations of business enabled him to concentrate his whole attention on objects of science, and to afford a kind and degree of assistance in promoting them, which few others had it in their power to give, and which it will not be easy to replace. To those who had the happiness of enjoying his private friendship he was endeared by the amiable cheerfulness

and simplicity of his manners, by his unaffected readiness to communicate information, and by his generous ardour in behalf of every object and institution connected with the diffusion of knowledge, and with the extension of the means of human virtue and happiness. Those who knew him most intimately can best appreciate his genuine piety and benevolence of heart, which formed the animating principle of his character, and pervaded every relation of his domestic life. By his associates in the Literary and Philosophical, the Natural History and Geological Societies of Manchester, his memory will be warmly cherished; and his death will be deeply regretted by the most distinguished members of the British Association, especially when they assemble in this town next year. His communications to the transactions of the Linnean, Geological, and other Societies, will form lasting evidence of his acquirements, and valuable memorials to his relatives and friends." — *From the Shrewsbury News of Saturday, December* 18, 1841.

114. *Locality of Trifolium stellatum.* It will be satisfactory to your correspondent Mr. Salmon (Phytol. p. 130), to learn that Trifolium stellatum is not lost at Shoreham, but still comes up in abundance every spring in its first-observed station—a low line of ballast-heaps, deposited, I am assured, before any present inhabitant of Shoreham can recollect, between the river and the wide bed of shingle on the seaward side of the river, overagainst the east end of the town. The plant flowers early, and a less abundant second crop is usually to be seen in the latter summer months. I once, several years ago, met with a few specimens among the shingle, overagainst Southwick; and again, on a part, now occupied by a quay, of the landward shore of the river, at Kingston. The immediate neighbourhood produces several plants worthy of notice, which Mr. Salmon has not enumerated; among them are Salicornia radicans, Poa bulbosa, distans, procumbens and Borreri, Festuca uniglumis, Medicago denticulata and Borkhausia fœtida. Vicia bithynica, which grew formerly near Southwick, is now, I fear, lost; as well as Chrysocoma Linosyris, of which Mr. Trevelyan found a single plant about 1825. Of the plants mentioned by Mr. Salmon, I never saw there Statice spathulata, Juncus acutus or Coronopus didyma. The first of these grows near Rottingdean; the other two in the West of Sussex.—*W. Borrer; Henfield, Jan.* 21, 1842.

115. *Anagallis arvensis and cærulea.* Five or six years ago I planted a root of the latter in a garden, and saved the seed, which I sowed the following spring; a considerable number of the plants now come up annually from self-sown seed, but always with blue corollas; not a single specimen of the red variety ever making its appearance in the garden.— *G. H. K. Thwaites; 2, Kingsdown Parade, Bristol, Jan.* 26, 1842.

116. *Note on Crocus vernus and C. nudiflorus.* It may probably be no uncommon thing to meet with individual specimens of the wild Crocus having more than the regular number of stamens, divisions of the perianth, &c., but as I am not aware whether this is the case, I wish to mention that in March last, when I visited the Nottingham meadows for the long-desired pleasure of gathering Crocus vernus, I met with three specimens having four stamens, four lobes to the stigma and eight segments to the perianth; also one, having five stamens, five lobes to the stigma and ten segments to the perianth. Can you or any of your correspondents inform me whether the leaves of Crocus nudiflorus are to be looked for at the same time as the flowers of C. vernus, or late in the autumn after its own flowering? I saw many large patches of leaves, indeed the turf of the meadows seemed in great measure composed of them, and I hoped that they might belong to C. nudiflorus, but on digging for the roots, they were apparently too young for flowering, and differing in no respect but greater

height from those of the flowering roots around, I fear my hopes were ill founded. I do not know that I ever saw a more lovely sight than those meadows presented in their spring attire; they were literally "glowing with beauty." — *Anna Worsley; Brislington, February* 1, 1842.

117. *Notes on Linaria spuria and L. Elatine.* In your number for the present month (Phytol. 137) are some remarks on a monstrous form of Linaria spuria, by Mr. Buckman. I should not have adverted to these remarks, as the monstrosity in question is of no rare occurrence, being in fact analogous to the same deformity in the flowers of Linaria vulgaris called *Peloria*, but that Mr. Buckman's observations are coupled with the additional assertion that L. spuria and Elatine are probably forms of one species, he having traced the identity through "numberless intermediate stages." Now if Mr. Buckman's observations are correct, the fact derived from them is one of great interest, and should serve as an additional warning to the manufacturers of species to proceed more leisurely for the future, in the use of the first and two last rules of Cocker's Arithmetic. But I am strongly inclined to suspect Mr. Buckman of having too hastily assumed his premises; and I think the source of error may be traced *in limine* from the close resemblance Linaria spuria and Elatine bear to each other in the conformation of their lower leaves when young, these being often rounded in the latter as well as in the former, for a considerable distance upwards, and in both usually more or less notched. I have frequently been deceived myself by the similarity of configuration, but I have never seen either plant when more advanced exhibiting any such ambiguity of structure as to create a doubt to which species it belonged, though I have carefully and repeatedly examined each kind in its native localities and in various parts of England, with a view, if possible, of determining a question which their close affinity naturally suggested to me. Both Linaria spuria and L. Elatine are very abundant in the Isle of Wight; the latter may be found in every field, affecting equally our stiff clays as well as our calcareous soils; the former confining itself more exclusively to the chalk, or where the subsoil is of that formation. In many places in the island the two grow intermixed, and sometimes in such abundance as nearly to cover the ground, L. spuria predominating over its congener. Yet in such localities I have uniformly failed in tracing any intermediate gradations between these nearly allied species, under circumstances the most favourable to the elimination of every possible variety of form and structure; hence, till proof has been brought forward to the contrary, I am justified in considering them truly distinct. This view of the case is strengthened by the geographical distribution of each species; an element, I conceive, of much greater importance than is usually supposed in determining the validity of specific difference, though to be adduced as collateral rather than as positive evidence in most instances. L. Elatine has a much more extended range in this country and on the continent than L. spuria, which is a decidedly more southern species. The limits of the first may be stated to be a little below 55° in England, and it ranges as far as Ireland to the westward, where however it is very local, if really indigenous. In Scotland it has not hitherto occurred at all, though from part of that country lying under its limitrophe parallel in England, it will probably be found ere long to inhabit the southern counties. On the continent L. Elatine extends somewhat higher, namely, into the South of Sweden as far as 56°, or a little beyond that parallel in Scania and Œland, where, as in Scotland and Ireland, L. spuria is quite wanting. The boundaries of this last may be assumed at about 54° in England (Malton corn-fields, Yorkshire ?), beyond which its occurrence on rubbish and ballast heaps must be considered

as merely fortuitous, and it sensibly diminishes in frequency in all the western counties, nor does it reach, like L. Elatine, to any part of the sister kingdom. On the continent L. spuria has apparently the same limits to the northward as with us, being absent from Denmark proper, though found in the neighbouring dutchy of Holstein under the same parallel as Yorkshire. As I have already remarked, L. spuria is more attached to certain soils, and to tillage lands, being rarely seen beyond the limits of cultivation, whilst L. Elatine I have repeatedly gathered, though sparingly, in places very dissimilar and remote from arable ground, even on heaths and in spongy bogs, by ditch-banks, &c. The *Peloria* form has not come under my notice in the Isle of Wight, but I have gathered it in corn land near Winchester, affecting both the species alike, and exactly in the way Mr. Buckman describes. It now only remains that I should notice the possibility that Mr. Buckman's "intermediate stages" may have resulted from cross impregnation, an accident to which plants of this natural order seem peculiarly liable, witness Scrophularia, Verbascum, &c. We have a beautiful hybrid occasionally produced in the Isle of Wight, between Linaria repens and L. vulgaris; it is therefore by no means unlikely that the same thing may happen with two other species of the genus still more nearly allied. The subject is well worth Mr. Buckman's investigation; and it is to be hoped that he will favour your pages with whatever conclusions he may hereafter arrive at.— *Wm. Arnold Bromfield; February* 4, 1842.

118. *Note on the British species of Tilia.* I was extremely glad to read the very interesting account of our native species of Tilia, communicated by Mr. Leighton in the words of Mr. Jorden, with further remarks by the former gentleman, (Phytol. 147); and they have, I think, like able counsel, made out a plain case in favour of their clients' claim to the rights of citizenship. Till I saw Mr. Jorden's account in your pages, I was disposed to believe the small-leaved lime (Tilia parvifolia) the only species really indigenous to this country, never having met with the broad-leaved ones in any situation where they had a perfectly wild appearance; but the distribution of the three species on the continent of Europe, in conjunction with the decided testimony of Mr. Jorden to their spontaneous growth in Worcestershire &c., has almost entirely, if not absolutely, removed my previous scepticism, I must however premise, that from some varieties I have observed in these trees, I am not without suspicions that Tilia parvifolia and grandifolia are the two extremities of a series, of which T. europæa is a middle link; but to substantiate this view of the subject would require much stronger evidence than I am able to bring forward at this moment. The genus Tilia seems to have its metropolis in the cooler portion of the temperate zone, a few species extending into the warmer parts only, where the increase of temperature is modified by humidity of soil or elevation. Tilia parvifolia is the most northern form or species, and the only one found native in Norway, Sweden, and the northern provinces of the Russian empire, ranging in Scandinavia to 63° 30′, and in Russia to at least 60°, being frequent in woods about St. Petersburg. The broad-leaved species, T. europæa and grandifolia, predominate in the vast forests that cover the extensive plains of central and eastern Europe between 55° and 50°, in Poland, Lithuania, and the more southern governments of Russia, where Pallas tells us ('Flora Rossica') the small-leaved lime (T. parvifolia) is rarely met with. The famous honey of Konow in Lithuania is gathered by the bees from the blossoms of a broad-leaved lime, which is there said to constitute entire forests, and is doubtless the same species as that of the bark of which the Russian bast or matting is manufactured. Proceeding farther south, we find in

France, Switzerland, and the North of Italy, the three forms or species of the lime-tree affecting elevated or even mountainous situations, rarely descending into the plains unless favoured by concomitant humidity and consequent diminution of temperature. In these parts the small-leaved lime is almost supplanted by those of more ample foliage. From the consideration of their geographical distribution from north to south, there seems no reason why all these three species or varieties of the lime should not occur wild in Britain, but local causes may combine to give predominance to one or other of them in particular. Thus the general low average of our summer temperature, resulting from the combined moisture and cloudiness of the atmosphere, even in the South of England, may and indeed does dispose to the production of northern species or varieties under parallels of latitude which, in countries where the sun's influence is less impaired by absorption of his rays in passing through a misty medium, or the actual interception both of heat and light by dense masses of vapour, would rather favour the development of southern forms of vegetation. We are geographically nearer the wine region of Europe than to any part of the Scandinavian peninsula along our southern coast, yet does the character of our vegetation partake more of a northern type than would be inferred from the consideration of latitude alone. I believe also our entomological productions approximate more to those of Sweden and Denmark than to the same tribes in France or Germany. In accordance with these facts we might expect that of all the three species of Tilia native to Britain, the small-leaved lime (T. parvifolia) would predominate with us, as being the more frequent one towards the north, and such appears to be the case. I can vouch to having seen T. parvifolia truly wild and abundant between Halstead and Sudbury, in various places along the road in hedge-rows and copses, and I found a wood between Bury and the village of Whepstead, about six miles distant, quite full of this species, but kept down by periodical lopping to the dimensions of a shrub. Mr. Abraham of Exeter told me that there were woods of T. parvifolia about Buckleigh in Devonshire, which Mr. H. C. Watson seems to think adverse to the idea of its being indigenous there, a conclusion the very reverse of that I should arrive at, since this species is by far the least ornamental of all our limes, and of little or no value as timber, nor have I ever heard of its being planted to any extent for copsewood. The very large wood of T. parvifolia near Shrawley in Worcestershire, mentioned by Mr. Lees, is another instance in point, were farther proof wanting to substantiate the claim of this species at least to rank as native with us, which was the opinion moreover of the cautious and scrutinizing Ray, as also of Evelyn. I would suggest whether Lyndhurst in the New Forest, may not be derived from a wood (hurst) of limes (linden) now no longer existing, as I find both T. parvifolia and europæa in old hedgerows about Lymington occasionally, which is not very distant from the former place, but I dare not venture to pronounce either certainly indigenous there. Evelyn seems to hint at the existence of Tilia europæa as a native tree, when he speaks of our wild limes as having "a *somewhat smaller leaf*" than the cultivated, and as apt to be *civilized!* that is, improved or made larger by transplanting. Gerarde, too, if I remember right (for he is not now at my elbow to ask the question of), refers to this or T. grandifolia as growing in the woods of Northamptonshire, under the then common denomination of Tilia fœmina, and Stokenchurch woods in Oxfordshire were till lately said to have produced both the broad-leaved species. Again, Mr. Ward, of Richmond, in Watson's 'New Botanist's Guide,' finds T. grandifolia truly wild on Clink Bank, near that town; and my excellent friend Mr. Borrer has observed a lime growing abundantly in a hill-side copse in Sussex, the station for which, an apparently truly wild one, he pointed out to me in an excursion we made to Beachy Head, in the autumn of 1840. From the periodical cutting of the brushwood not permitting the trees to acquire a flowering size, Mr. Borrer cannot with certainty refer them to their species, I understand however that they belong to the kinds with broad foliage. Other stations for Tilia europæa and grandifolia are given both in England and Scotland, as at Boxhill, Streatham, Blair Athol and near Edinburgh, but from what has been just said of the distribution of the broad-leaved limes, it is not probable that they are indigenous to the latter country. In Ireland T. parvifolia is the only really *indigenous* species recorded by Mr. Mackay ('Flora Hibernica') on the authority of Templeton, and this is what we might expect from the nature of the climate of that island. Mr. Leighton's observations on the differences between our three limes (now I trust fully established as aboriginal in Britain), are made with his accustomed accuracy. Tilia parvifolia in particular is, as generally seen, an extremely well marked species, from its smaller, more numerous and much later flowers, and their weak leathery capsules, besides the other striking features so ably pointed out by Mr. Leighton; yet varieties do present themselves with most puzzling and aspiring tendencies to emulate the umbrageous honours of their more "*civilized*' fellow species.—*Id.*

119. *Additional Facts on Monotropa Hypopitys.* Mr. Wilson, I see (Phytol. 149), objects to my view of the parasitic growth of Monotropa; and the difficulty of the subject is shown, when even with the aid of the microscope so acute an investigator could not arrive at positive certainty, even with respect to the "woolly substance" investing its roots. This hairy envelope, I still think, is part of the economy of the plant, having found it present in every specimen, and appearing to my observation to be wound about the *young tubers* of the Monotropa and the rootlets of the beech, at their junction with each other. No doubt it may be detached from the clustered fleshy radicles of the *flowering plants*, and from the shrinking of the beech-roots the connexion, with the nicest observation, appears dubious. Had Mr. Wilson, however, the harsh oolitic soil of the Cotswolds to deal with, as I had, instead of the sand of Lancashire, and seen me working at my task for a week, he would scarcely have imputed to me a want of *care*, in so far as I had conducted the investigation. Anxious only to elicit truth, I have stated what appeared to my observation with ordinary appliances, being desirous, if possible, to render the matter clear to general observation; nor does it follow that due care was not employed because I had no facilities for microscopic dissection close at hand. A powerful double lens, my pocket companion for years, certainly *Ithurielizes* my sight to some extent, and as far as it goes may be depended upon. It appeared to me, then, that the fleshy clustered radicles of the Monotropa, about which there can be no doubt, had ultimate fibres, spongioles or suckers, *connecting them with the rootlets of the beech.* But as I have stated throughout, young tubers must be examined for this, the "woolly substance" about the old plants, whatever it is, being too inextricably entangled to allow us to arrive at any certainty as to the nature of its connexion. I shall here, however, just state an *additional fact*, confirmatory of my views, and I invite other botanists to examine the subject, with a perfect freedom from prejudice. Wishing to see if the young plants I had obtained from among the beech-roots could be kept alive, I immersed two in a tumbler of water, where they remained about a month, when, as they made no progress, I took them out for preservation, and placed them in the sun to dry on a piece of white paper. To my great surprise I found them, some days after, *affixed to the paper as if glued thereon,*

nor could they be shaken off; while a lens, on examination, *plainly showed* very minute hair-like fibres or suckers proceeding from the fleshy tubers of the young Monotropa, and *binding it down to the paper*. Unfortunately, one of these fixed plants (which thus appear at least *curiously to have simulated a parasitical growth*) was trodden upon through an accidental fall of the paper, but the other remains affixed as at first; and I hope to induce some friend, more skilful at microscopical dissection than I profess to be, to examine it. What I find remarkable, and I write from careful reiterated observation on specimens collected by myself, is the diversity in the size of the clustered roots, from old ones possessing numerous rudimentary stems, to small tuberous knobs where the buds are scarcely discernable with the naked eye. In these last, more especially, I find the fleshy tubers closely applied to and even twisted round the beech-roots, so that I cannot separate them without violence, even after having possessed them above four months. In a specimen now before me, after immersion in water, a beech-root just at its entrance among the clustered radicles of the Monotropa, is obviously thickened, and covered by them in an imbricated manner, just as if melted glue had been laid on with a brush. The subject is of course, as I have myself intimated, open to further elucidation, and I have only had the opportunity of the inspection, carefully made, however, which I have already recorded, (Phytol. 98). Yet though opinions may differ as to the real nature of the attachment of Monotropa to the roots among which it is found nestled, I should think that botanist rash who, in the present state of the enquiry, and without having watched the plant from its first germination, should absolutely affirm that it is *not* parasitical. I may here state that all my mature flowering specimens of Monotropa, as well as the young plants, are perfectly *erect*, and in only one instance can I perceive the *slightest* indication of a bend at the summit of the stem. As Mr. Wilson is at issue with me as to the *scent* given out by the plant, and "counts noses" against me, it is but fair to hear *my* evidence as to the odorous influence exercised by Monotropa upon the olfactory nerves in Worcestershire. Without mentioning my own impression, I presented three mature plants in seed, which were gathered in September last, to a lady, and requested her this morning to smell them. She had no sooner done so than she instantly exclaimed—"*Beautiful! just like the Mezereon!*" This, be it remembered, is after the lapse of nearly five months; but when I had about fifty fresh plants together, the fragrance proceeding from them was so powerful as to scent the room they were in for weeks, and was instantly perceptible on opening the door. As I have stated, the impression of the fragrance on *my* senses assimilated to that of primroses, although of course much more powerful; assuredly "a raw potato" is the last and lowest simile that would have occurred to me as a comparison of its odour.—*Edwin Lees; Malvern Wells, February* 8, 1842.

120. *List of Algæ from Guernsey*. We know so very little of the marine Botany of the Channel Islands, that I am induced to send you the following very imperfect list of Algæ for insertion in 'The Phytologist.' The collection from which I prepared it, was made in Guernsey last summer, by Mr. D. Ross of Lasswade, who, not being an algologist, merely took such species as came in his way. This will account for the absence from the list of various common plants, as well as of a large number of species which have such a general resemblance to each other as to cause them to be passed over by individuals unacquainted with their forms.—*R. K. Greville; Edinburgh, February* 10, 1842.

Fucoideæ.
Cystoseira ericoides
granulata
fœniculacea
fibrosa
Halydrys siliquosa
Fucus vesiculosus
serratus
canaliculatus
Sporochnoideæ.
Desmarestia ligulata
aculeata
Dichloria viridis
Dictyoteæ.
Dictyota dichotoma
Dictyosiphon fœniculaceus
Punctaria latifolia
Asperococcus echinatus
Ectocarpeæ.
Cladostephus verticillatus
spongiosus
Sphacelaria scoparia
cirrhosa
Ectocarpus tomentosus
Chordarieæ.
Corynephora marina
Spongiocarpeæ.
Polyides rotundus
Furcellarieæ.
Furcellaria fastigiata

Florideæ.
Delesseria sanguinea
sinuosa
alata
Hypoglossum
ruscifolia
Nitophyllum punctatum, v. ocellatum
laceratum
Rhodomenia laciniata
jubata
palmata
Plocamium coccineum
Rhodomela subfusca
pinastroides
Laurencia pinnatifida
tenuissima
Chylochladia ovalis
kaliformis
articulata
Gigartina purpurascens.
confervoides
acicularis
plicata
Chondrus mamillosus
crispus
membranifolius
Brodiæi
Sphærococcus coronopifolius
Gelidium corneum

Ptilota plumosa
Ceramieæ.
Polysiphonia thuyoides
fruticulosa
spinulosa
atrorubescens
nigrescens
fastigiata
byssoides
Dasya coccinea
Ceramium rubrum
diaphanum
ciliatum
Griffithsia equisetifolia
setacea
Callithamnion Turneri
tetricum
Chætophoroideæ.
Myrionema strangulans
Conferveæ.
Conferva rupestris
lætevirens
pellucida
Siphoneæ.
Codium tomentosum
Ulvaceæ.
Ulva latissima
Linza
Enteromorpha compressa

121. *True office of the Earth in relation to Plants.* Although so much has been written on the subject of gases evolved and absorbed by plants; on the form and functions of the stomata or mouths of plants; and on the obvious numerical preponderance of the stomata in the leaves and branches over those in the roots; yet the broad assertion that the office of the earth in relation to plants is precisely equivalent to its office in relation to animals — namely, to maintain them in the position best suited to their well being — has, I believe, never yet been made in print. Almost as long ago as I can recollect, this phytological fact was impressed forcibly on my mind by seeing how beautifully hyacinths blossom with their roots immersed in water and without a particle of earth that they could possibly reach. I have constantly asserted my belief on this point, but have always been laughed at as a visionary and theorist. It is, however, with infinite satisfaction that I see my views slowly gaining ground. Each succeeding year diminishes the number of those who assert that plants feed on the earth as we feed on meat and bread and potatoes: still, by far the larger portion of conversing mankind religiously believe this, and most of our farmers look on a rich soil as being as directly food for their wheat as a sack of barley-meal is food for their pigs. Now the truth is the very converse of this: the earth feeds on plants—is increased by plants — owes what is called its richness and good properties to plants. These facts are not only interesting in themselves, but the ends to which they are applicable would

furnish almost a new era in existence. It can scarcely be doubted that nature has provided, in the earth, the best possible receptacle for the roots of plants; yet even this position will admit of considerable modification, for we have first to consider whether our object in cultivation is to carry out the designs of nature, or to make nature subserve our artificial requirings; if the latter, it is quite certain that art can be advantageously applied: we have but to call to mind our commonest fruits and vegetables as examples. Thus, although plants may best achieve their destined ends when rooted in the earth, it may reasonably be doubted whether in turning their good properties to our uses a more advantageous receptacle may not be found. But without extending the enquiry so far as this, if it be once admitted that earth is in no wise the food of plants, then, *cæteris paribus*, the most unproductive sand, for instance, the heaths of Surrey, may be rendered as productive as the Golden Valley: we have only to make use of this sand, as nature intended it, for a receptacle of roots, and then having learned what is the true food of plants, to supply that food in the most profitable way. It is now generally admitted that carbonic acid gas is the food of plants; but leaving even this question to those more competent to decide on it correctly, it is quite certain that their food, whatever it may be, is evolved in greater quantities from certain chemical preparations than from the richest and most highly manured earth. Poverty of soil thus becomes a nonentity: rotation of crops a mere amusement: once admit that earth is simply a receptacle for roots, and you invest it with a property which you cannot wear out. Every common and heath may be made to produce wheat at the will of the cultivator, and the supply must ere long greatly exceed the consumption; that very description of food, the supply of which causes such difficulty to all our legislators, becoming more abundant than our most zealous philanthropists could desire.—*Edward Newman; 65, Ratcliff Highway, February 12, 1842.*

122. *New British Equisetum.* We have received from Francis Whitla Esq., of Belfast, a very fine Equisetum, hitherto unnoticed as British, the Eq. elongatum of Willdenow; a southern plant, indeed, but of which, as is well known to be remarkably the case with some other plants that have been supposed to be peculiar to warmer skies, the range has extended to Ireland. Mr. Whitla found it in mountain glens, near Belfast. * * Our specimens are 2½ and 3 feet long. If the roughness of the stem, its great length and ramification, and elongated teeth of the sheaths, and the apiculus of the spikes be considered, it cannot be confounded with any other of our native species.—*London Journal of Botany, p. 42.*

123. *New British Chara.* Chara latifolia of Willdenow. This fine species of Chara, which I have no hesitation in stating to be new to Britain, occurred in great abundance in Belvidere Lake, Co. Westmeath, where I collected it in August last. The great size and semipellucid appearance, at once struck me as remarkable. The main branches are striated and covered with raised rough points, as are the first joints of the whorled ramuli, while the remaining portion consists only of one pellucid tube, which is thicker than the lower joint, and ends in a sharp point. The branches of the whorls are again beset with smaller ramuli (not bracteæ), in which respect it differs from all our species in the opaque division. I regret I could not find the species in fruit, neither globule nor nucule was present; though I examined hundreds of specimens in various parts of the lake, where it sometimes covered the bottom to the extent of many square perches; and what is singular enough, all the other species in the opaque division occurred abundantly in the same lake, and were all in full fruit, each preserving its respective character.—*D. Moore; in London Journal of Botany, p. 43.*

ART. LV.—*Proceedings of Societies.*

LINNEAN SOCIETY.

December 21, 1841.—Read: 1. Extracts from a letter to Mr. Solly from Mr. Griffiths, giving a summary of the results of observations made by him on the development of the embryo in Santalum, Viscum, Osyris and Loranthus, as well as remarks on the reproductive organs of Isoetes. 2. A paper by Mr. Miers, containing descriptions of new plants, viz., Solenomeles chinensis, previously published under the name of Cruikshankia, which name had been appropriated to another genus: and two species of the new monocotyledonous genus Distrepta,—D. vaginata and oblita. 3. A letter from Mr. Bidwell of Sydney, containing a description of a new Araucaria, which attains the height of 200 feet, and about 100 feet of the stem is frequently without branches: also of Nuytsia floribunda, in the botanic garden at Sydney, in the embryo of which three cotyledons have been discovered by the author.

January 18*th*, 1842.—Robert Brown, Esq., V.P. in the chair. In consequence of the decease of Aylmer Bourke Lambert Esq., V.P. one of the founders of the Society, no papers were read at this meeting.

February 1*st*.—The Bishop of Norwich, President, in the chair. Read, a paper on the development of the embryo in *Tropæolum majus*, by Dr. Jerrold. The changes which take place in the ovule and embryo, from the first appearance of the former to the perfect formation of the latter, were minutely detailed.

February 15.—Robert Brown. Esq., V P. in the chair. This being the evening appointed for the election of a person to fill the joint offices of Clerk, Librarian and Housekeeper, vacant by the lamented death of Professor Don, there was an unusually large attendance of Fellows. The chairman briefly announced the object of the meeting, stating that two candidates had offered themselves for the joint offices—Mr. Kippist and Dr. Lemann, and that balloting papers had been prepared in accordance with the laws of the Society. The Secretary having read the laws relating to the election of Librarian &c., the ballot forthwith commenced and continued until 9 o'clock, when a scrutiny of the votes was taken and the result handed to the President, who stated the numbers to be,— for Mr. Kippist, 87, for Dr. Lemann, 69; and declared Mr. Kippist duly elected.

BOTANICAL SOCIETY OF EDINBURGH.

Thursday, *December* 9, 1841.—Professor Balfour, and subsequently Professor Graham, in the Chair.

Contributions to the herbarium were announced from Lady Keith Murray, and seven other members. The specimens from her ladyship were particularly admired for their beauty and fine state of preservation.

After the election of several members, the various office-bearers for the ensuing year were chosen, including Prof. Christison, President; Dr. Greville, Prof. Traill, Sir Wm. Jardine, Bart. and Professor Balfour, Vice-Presidents; Mr. Brand, W.S., Secretary and Treasurer; Mr. Joseph Dickson, Corresponding Secretary; Mr. Edward Forbes and Dr. Douglas Maclagan Foreign Secretaries.

The following communications were read.—

1. On the Groups *Triandræ* & *Fragiles* of the genus Salix. By the Rev. J. E. Leefe, Audley End, Essex. "Whoever would study the willows with success, must see them growing at different seasons of the year; for fragments gathered at one season only, serve but to perplex and confuse the botanist. Another source of confusion is the practice of collecting specimens, without numbering *them* and the *tree*, trusting subsequently for identification to the memory alone, whereby a most unpleasant feeling of uncertainty is produced. The changes in the form of the leaves, and in the relative proportion of some of the parts of fructification at different periods of growth, are often so surprising, that without a mark of recognition, I should frequently have doubted whether my specimens had been all collected from the same tree. Again, it is a common practice to select for preservation the largest and most vigorous-looking specimens, in consequence of which an erroneous idea of the *average character* is very apt to be produced. If an unusually luxuriant specimen be chosen, it should have a corresponding label." The author proposes the cultivation of the more intricate species of the genus in gardens, in order that their variations may be regularly observed: and in continuation recommends the adoption of a practice followed by himself:—"I should advise that the specimens of every *Salix* in a herbarium (excepting, of course, species about which there can be no mistake), should be such as to present one or more regular series illustrative of the *progressive* development of the catkins, each set being taken from the same tree at intervals during the flowering season,—and that at least two specimens of the leaves, gathered at different periods, should be preserved, so as to show the form of the stipules, and the progressive alteration in the foliage;—also, that thin sections of a catkin of each species, perpendicular to the axis, should be gummed down, by which means the form of the ovarium and any other particular respecting it—the length and pubescence of its stalk, the nectary, the character of the axis, and the number of ovaria in a given length of the spiral, could easily be seen without mutilating the other specimens. The exact date also of each specimen should be registered, whereby many ambiguities would be removed. For instance, it is common to find characters derived from the relative proportion borne by the nectary to the ovarium; but this varies greatly, as a dated series of specimens would immediately make evident,—sometimes, as in the *viminalis* group, from ½ to ¼. Good specific characters frequently disappear in the drying process,—for instance, the furrowed shoots of *S. amygdalina*, which afford an excellent mark of distinction from *S. Hoffmanniana* in fresh specimens, cannot be relied upon when the specimens are dry, owing to the shrinking of the bark." After some remarks on the willows as occurring at Audley End, the author gives a description of each species in the above groups.

2. On three newly proposed species of British *Jungermanniæ*. By Dr. Taylor, Dunkerron. Communicated by Mr. William Gourlie, jun.

3. Remarks on the Flora of Shetland, with a full catalogue of plants observed in these Islands. By Mr Thomas Edmonston, jun. The author observed that the Botany of Shetland had never been adequately investigated. Dr. Neill, who spent ten days or a fortnight there in 1804, was the first to enter upon this field, and he was followed by Dr. Gilbert M'Nab, who spent a few weeks there in 1837. Mr. Edmonston (a native of Shetland) has devoted the last four years to this agreeable pursuit, and in that time has visited the whole district. Two years ago, he transmitted to London a list of the plants which had then been observed by him, and this list, though incomplete, and, in some instances, inaccurate, made its appearance lately in the 'Annals of Natural History,' without any previous intimation, so that he had no opportunity of correcting it. The Orkney Islands, which are numerous, stretch about 70 miles from S.E. to N.W. Their geological formation is altogether primitive; the most abundant rocks being gneiss, granite and limestone, which are very generally covered by large tracts of peat moss, and often destitute of all vegetation excepting the commonest bog plants. Unst is the most northerly island, and is also the most diversified in its formation; gneiss, mica slate, chlorite slate and serpentine being all found on it. Its vegetation is equally varied, some of the species being peculiar to it in Britain, and others being rare elsewhere. The most interesting of these, viz., *Arenaria norvegica* and *Lathyrus marítimus*, were discovered by Mr. Edmonston when he was little more than twelve years of age. Ronas Hill, which attains an elevation of about 1500 feet, is the highest land in Shetland, and it is only upon it that the botanist meets with anything like alpine vegetation. The largest island, usually called the Mainland, presents little of interest, but is, for the most part, a succession of dreary peat moors, occasionally enlivened by *Scilla verna* and *Pinguicula vulgaris*; nor are the other islands generally more productive, though sometimes a fertile spot occurs. "The general character of Shetland vegetation," says Mr. Edmonston, "seems to be subalpine, or nearly so, for we find plants belonging properly to that region, in every situation, such as *Thalictrum alpinum*, *Draba incana*, &c., which grow down almost to the sea level." The list of species which accompanied this paper, comprehends 395, viz., 286 phanerogamic and 109 cryptogamic,—the latter consisting of 22 ferns, 65 mosses and 22 hepaticæ.

4. Account of a Botanical Excursion in Norway. By Dr. John Shaw. The circumstance that most struck Dr. Shaw in this tour, is the almost total absence of *Calluna vulgaris*, which covers our Scottish moors, but which in Norway is so far from being common, that throughout an extent of 600 miles, he "could scarcely find a specimen of it." He also remarks on the extreme wildness and sterility of some tracts, as contrasted with the fertility and luxuriance of vegetation in others. The species which he observed were in general the same as those which grow in Scotland,—those not indigenous here being in about the proportion of 1 to 5; but several plants which are extremely rare in this country, such as *Menziesia cærulea*, *Pyrola uniflora* and *Linnæa borealis*, he found abundant in many places. He was also particularly gratified by the beauty and luxuriance of *Trollius europæus*, of which he observed "myriads, with their corollas like half pounds of butter, gracefully waving their heads, almost in the frozen region."—*Condensed from the Report in 'The Edinburgh Evening Post and Scottish Standard,' of December* 15, 1841.

BOTANICAL SOCIETY OF LONDON.

February 4th, 1842.—Dr. Willshire in the chair. Specimens of the following plants were presented:—*Chara latifolia*, Willd. found at Belvidere Lake, Westmeath, in August, 1841, by Mr. D. Moore, of the Dublin Glasnevin Garden; *Equisetum elongatum*, Willd. from Collin Glen, near Belfast; both presented by Mr. D. Moore.* *Æcidium Thesii*, Leefe, collected at Hildersham, near Linton, Cambridgeshire, by The Rev. J. E. Leefe, and presented by him. *Cistopteris alpina*, Link, collected at Low Layton, Essex, and presented by Mr. E. H. Button. British plants from Mr. J. Riley, Mr. S. King, Miss Roods and Mr. Mitchell; foreign ferns from Mr. J. Riley; British fungi from Mr. H. O. Stephens; and a collection of British woods from Mr. T. Twining, jun.

A paper was read by Mr. Adam Gerard, "On the Botany of Kotgurk" in the Himalaya, taken from the notes of Captain Patrick Gerard, of the Bengal Native Infantry. Kotgurk is surrounded on three sides by thick woods, in which the Rhododendron flourishes; they and the neighbourhood abound in pines, oaks and almost every tree, shrub and plant, indigenous to Europe, besides many others unknown. Amongst the latter is a species of small red bamboo, which grows all over the higher mountains, attains the height of 8—12 feet, and is used for a variety of domestic purposes. The following were mentioned as the chief vegetable productions:—Rice, several kinds, mostly of the coarser sort; Jow, or barley; Oowa jow, (*Hordeum celæste*); Kunuk, or wheat; Phuphura or phuphur, (*Panicum tartaricum*); Chuberee, or Jaburee, the grain of which differs little in appearance from that of the Phuphur and Oogul; opium in considerable quantities for export; three species of Bathoo (*Amaranthus Anardhana*); various kinds of pulse; a small quantity of cotton and ginger on the banks of the Suthy and other rivers; Indian corn, limited. The Jow ripens earliest; the Oowa jow and Kunuk fully a month later. In elevated situations in the neighbourhood the crops are often very backward, the wheat especially, which is frequently not housed until the rainy season has set in, and is sometimes reaped in a green state. The climate and other peculiarities were fully described.—*G. E. D.*

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* See page 173.